

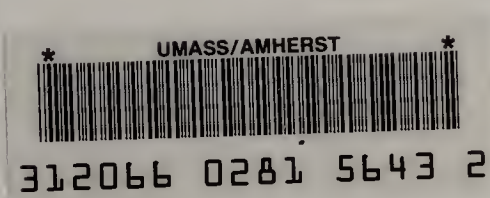


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**THE MASSACHUSETTS CONVENTION CENTER AUTHORITY  
BOSTON CONVENTION AND EXHIBITION CENTER**

**CONSTRUCTION PROJECT MANAGEMENT ASSESSMENT**



**Prepared by**

**KPMG LLP, 99 High Street, Boston, MA**

**Bovis Lend Lease, 99 Chauncy, Boston, MA**

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February 28, 2001

Ms. Gloria Larson  
Chairman  
Board of Directors  
The Massachusetts Convention Center Authority  
900 Boylston Street  
Boston, MA 02115

Dear Ms. Larson,

Attached is the report following our recent Project Management assessment for the Boston Convention and Exhibition Center project. This report has been issued pursuant to our Agreement with the MCCA.

In this report you will find a description of the service methodology we have used, our recommendations for improvements to the Project Management, and standards for the implementation of those recommendations. These assessment services and our recommendations constitute Phase One of our Agreement. Additional phases of our Agreement include assistance with the implementation of those recommendations and ongoing monitoring of the future activities on the project.

This engagement has been enhanced by the cooperative efforts of the various individuals working on this important project. We wish to express our appreciation for those efforts and we look forward to the continuation of this work.

Sincerely,

A handwritten signature in black ink, appearing to read "Dennis L. Allen". The signature is fluid and cursive, with a prominent initial "D" and a long, sweeping underline.

Dennis L. Allen  
KPMG Construction Advisory Services



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## ***Executive Summary***

KPMG LLP, with the technical assistance of Bovis Lend Lease, was retained to review the managerial and fiscal control aspects of the new Boston Convention and Exhibition Center. Early in the review process, a number of issues became apparent which would need to be addressed to make necessary enhancements to the management processes on the project. These issues centered around three major areas: staffing and procedures; cost estimating; and reporting.

To date the management of the project has been attempted with a minimalist approach towards personnel issues as well as process and procedural issues. Although this has already caused a number of important tasks to be delayed or performed inadequately, the future challenges of the project, as it begins construction in earnest, will only exacerbate the situation. We have made a number of suggestions that should serve to eliminate this situation which should be effective as well as cost efficient.

Until November of 2000 , the cost estimating performed on the project has been performed on an ad hoc basis with differing methods for the amounts used and some amounts based on target savings rather than costs as designed. Two comprehensive cost estimates performed in December 2000 – January 2001 have produced the first reliable numbers which should be used to make necessary cost/scope/design decisions for the project. The implementation of this new estimating process is a recommendation of this report and has already been implemented.

Although communication on the project has occurred with great regularity, we have noted that the processes to communicate the status and challenges on the project have been informal and incomplete. Appropriate systems to memorialize transactional data have not been implemented and the information maintained and/or conveyed to the Development Committee of the Board has been inconsistent. Recommendations regarding formal reports and their contents have been included in this report.





Other areas have been noted which need enhancement, and appropriate recommendations have been included for these also. Further details on the three large issues indicated previously are also included herein.

Upon hearing our first findings informally in late August 2000, the Board of Directors ordered the implementation of corrective actions where possible. They directed the necessary personnel and procedural enhancements, authorized an independent cost estimate, and sought the generation of more complete information on the project. Please refer to the "Subsequent Events" page at the end of this report. Although a number of recommendations have not yet been implemented, we believe the actions taken to date and the planned activities in the future will put the project in the best position to successfully meet its challenges in the future. What had been a "Yellow Light" rating at the time of our initial assessment is rapidly moving towards a "Green Light" rating due to the activities of the Board and the Project Team.





## ***Project Background***

The Massachusetts Convention Center Authority (the MCCA) has undertaken a project to construct a public use convention center facility to be known as the Boston Convention and Exhibition Center (the BCEC or the Project) located in the city of Boston. The MCCA has contracted with Tishman Construction Corporation (Tishman) to be an owner's representative, HNTB/RVA Architects (HNTB/RVA) to be the architect, and Clark/Huber, Hunt & Nichols/William Berry, a Joint Venture (CHB) to be the construction manager. The Project, as of the issuance date of this report, is already underway and therefore, certain financial and managerial controls and processes already exist and transactions have been processed. The Project is scheduled for completion in 2004.

As of August 2000, the estimated cost for the Project was over \$500 million including hard and soft costs. Most of the cost will be incurred through CHB for its construction management costs and the costs of its subcontractors. Due to the technical challenges, the public accountability issues, and the funding aspects of the Project, there is a great degree of sensitivity regarding the Project's final cost. It is the intention of the MCCA Board of Directors (the Board) that the managerial and financial control system for the Project maintain the highest standards. As such, the Board has engaged KPMG LLP (KPMG) to perform a review of the financial and managerial controls on the project.



## ***KPMG's Assignment and Methodology***

KPMG's Construction Project Advisory Services Practice, with the assistance of Bovis Lend Lease (BLL), an international construction management firm, has been engaged by the Board to review the processes and controls currently in place by CHB, Tishman, HNTB/RVA, the BCEC project staff, and the MCCA staff (collectively, the Project Team) and to more fully assess the construction management aspects of the MCCA. The objectives of the reviews are to provide an assessment of the adequacy of the project management organization to control costs, to provide all the required project documentation and reporting necessary for the Board and to comply with all fiscal or fiduciary responsibilities regarding the development and construction of the Project.

To fulfill these objectives, a four step process has been followed by KPMG and BLL for each entity mentioned above:

1. Though not always specific, the respective contracts identify what work is expected of each entity. KPMG and BLL reviewed each entity's responsibilities as documented in their contracts regarding significant control areas such as budget maintenance, design management, invoice processing, contract and change order management, schedule management, and reporting. We attained an understanding of the individual responsibilities and how those responsibilities fit together, noting any duplications or deficiencies regarding the fiscal and managerial controls for the Project.





2. KPMG and BLL conducted interviews and site visits with the entities to further discuss the responsibilities noted above. The objective of these interviews was to determine, with some degree of specificity, the entity's actual plans to control the financial performance of the Project. From these interviews we determined each entity's expected outputs, the derivations of those outputs, and the expected reliability of their work given the stringent demands of the Project. Further, we held joint sessions with project team members regarding the subcontractor bidding process and possible improvements.

3. KPMG and BLL benchmarked the individual responsibilities and actual plans of execution of each entity against what would be considered industry "best practices" for this type of project. Although each of the entities are well credentialed, their planned business processes and procedures may not always compare well to best practices in the industry. Industry "best practices" are a necessary benchmark due to the size and complexity of the Project, as well as the public fiduciary responsibilities of the MCCA.

4. KPMG and BLL developed an assessment of the individual and overall status of the control environment on the Project and provided recommendations where necessary on its improvement. The assessment considered the current organizational strengths and weaknesses of each entity, as well as possible risk areas which may be encountered over the life of the Project.

Following the individual reviews, we summarized the overall project control system and formed conclusions regarding the process as a whole. We then rated the situation in terms of a red, yellow, or green light status and included a summary of our recommendations on how to improve the control environment. Finally, we have included standards for implementation of the recommendations. KPMG and BLL's review evidenced by this engagement was a planned control





*Boston Convention and Exhibition Center*

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*Construction Project Management Assessment*

measure and the recommendations are meant to enhance any management weaknesses noted herein that are within our scope of services.





## ***Individual Entity Assessments and Recommendations***

### **I. CONSTRUCTION MANAGER - CHB**

The Construction Manager has the responsibility to build the Project. However, it also has responsibilities for design review and cost estimating. It conducts the bidding and retains subcontractors, manages the physical work on the Project, creates and maintains the construction schedule, and bills the MCCA for the cost of the work performed plus a fee. As part of its agreement, CHB will have a Guaranteed Maximum Price (GMP) for the contract, which is the maximum cost to the MCCA, barring change orders. It is expected that the GMP will be set when the major bid packages have been bought. The GMP can be a reliable benchmark for the measurement of the Construction Manager's performance and risk. Until a reliable GMP has been agreed upon, the Construction Manager is not at risk for the final completed cost of the Project.

***Recommendation #1: The expected strategy for the setting of the GMP, as provided for by the contract and the enabling legislation for the project, should be followed as urgently as practical.***

As noted above, the CHB contract is fashioned as a Construction Manager type contract, not a General Contractor type contract. As such, rather than working in an adversarial relationship with the MCCA, the contract specifies that CHB is to work "...in the best way and most expeditious and economical manner consistent with the interests of the Authority..." It is the expectation of the MCCA in the drafting of the contract that CHB not serve as a "broker" for the subcontractors, but rather to actively work on behalf of the interests of the MCCA in reviewing drawings and bid packages, negotiating with subcontractors for advantageous pricing, and providing independent oversight of subcontractor activities, change orders, etc.



Our review of the CHB contract language indicates it is in conformance with similar contracts and includes the necessary clauses to determine the cost of the work, the fees, the payment applications and retainage. We have noted however, that there is a common lapse in specificity regarding the calculation of the cost of change orders. It was noted that the BCEC staff has initiated steps to establish the change order process and pricing arrangements to be used on the Project.

We do have concerns, however, on the adequacy and independence of CHB's review of the subcontractor pricing and field supervision of the actual work performed. In our review of the support documentation for Change Order # 008 (FWO004) we observed erroneous labor unit costs, questionable material charges, and questionable equipment pricing. There is no indication in the documentation furnished that CHB questioned or pursued any of these possible discrepancies. This is inconsistent with the responsibilities of a Construction Manager as indicated above.

Further, there were a number of issues highlighted by other members of the Project Team regarding CHB's coordination and communication with other members of the Team. In summary, CHB has been criticized for not vigorously performing their construction management type responsibilities.

***Recommendation #2: The MCCA should further clarify the responsibilities and expectations of CHB. Any agreed upon changes in the responsibilities and/or expectations should be documented if they differ from the existing contract. A clear understanding of the role of CHB, as it pertains to subcontractors, should be achieved and subsequently enforced.***

We have some concerns regarding the approved Baseline CPM schedule prepared by CHB. This schedule will require close monitoring and some initial modifications. The CPM schedule has





not been “manpower loaded” by CHB. Manpower loading consists of adding manpower requirements to the activities in the CPM schedule. It gives project management the ability to compare actual workforce mobilized against projected workforce needs, thereby giving an indication of subcontract performance. Further, the lack of detail in the mechanical equipment and steel activities may prove to be problematic and need to be monitored closely.

***Recommendation #3: CHB should be directed to incorporate manpower loading in the Baseline CPM schedule. The activities for the mechanical equipment and steel activities should be revised to show further details and relationships.***

Further detailed comments on the accounting and payment application process for CHB will be forthcoming as we complete a detailed audit of their costing and billing procedures. The audit and its findings are a planned part of future phases of the KPMG and BLL engagement.

## II. BCEC STAFF

The BCEC staff, led by the Director of Development and Construction/Capital Projects (the Director), is charged with the day to day supervision of the Construction Manager, consultants, and architects, and the coordination of those parties among themselves and all other stakeholders in the Project. To date, the BCEC staff has brought the Project forward, establishing the project offices and performing its basic functions as indicated above.

Many of the functions of the BCEC staff were originally delegated as responsibilities under the Tishman contract. However, as the the Director was engaged subsequent to bringing the Tishman organization to the Project, he and his staff have retained effective responsibility for a number of the Tishman functions. It has been in the failure to delegate and/or empower Tishman, or to adequately perform internally the omitted Tishman functions, that we believe the



Director has made a number of tactical errors.

In an effort to reduce soft costs on the Project, the Director has prohibited Tishman from implementing its formally accepted staffing plan (see also the Tishman contract recommendation in the Consultant - Tishman section of this report). The Director has indicated that, in his opinion, not all of Tishman's staff to date has been qualified, which has also influenced the delay in adding additional Tishman staffing. Regardless of the reasons, it is our observation that the overall staffing level of the project is currently deficient as evidenced by the delays in high priority tasks, the cancellations and/or postponements of meetings and the occasionally reactionary environment on the Project. As the Project transitions to the construction stage, this staffing shortage will only become more acute.

***Recommendation #4: The staffing levels of the Project should be enhanced to provide for more deliberate, proactive management efforts of the project team.***

The Director has also prohibited Tishman from performing a number of its specific contractual functions, yet has not adequately performed these functions himself or found alternate means of having these functions performed. Five notable examples of tasks Tishman has been prohibited to perform, or has been restricted in their performance, are the preparation of a project Management Plan, the implementation of a Project Management Information System (PMIS), the oversight of the MBE/WBE efforts on the project, the maintenance of an independent cost estimate, and the preparation of a monthly progress report on the Project. As a result of these tasks not being performed, there have been negative impacts on the Project in varying degrees.

A project Management Plan is a comprehensive document that identifies the organization, responsibilities, and processes of the project team. Its existence is important not only to document the





planned activities but to assure that a well reasoned plan exists.

A part of the Management Plan is an organizational chart for the Project. Although an organizational chart has been proposed by the Director, it is awkward as lines of authority and responsibility are unclear and the overall shape of the organization resembles more of a “wheel and spoke” concept than a “pyramid.” Our interviews at BCEC give rise to concerns that the duties, the decision making authority, and lines of responsibility are not clear.

***Recommendation #5: The BCEC organizational chart (including Tishman, CHB, and HNTB/RVA), should be modified to reflect simpler lines of authority. The number of direct reports and responsibilities should be reduced to a more manageable quantity. A conceptual organizational chart, in summary form, is attached to this report.***

An example of this organizational disorder has been the structural steel buy issues. The original bid was based on incomplete design documents, with its inherent risks, and the terms and conditions/schedule/scope needed further clarification. Also, there was inadequate bid competition due to the actions of several possible subcontractors. During the contract negotiations, the design became more complete, but the final contract was still based on incomplete drawings (certain VE assumptions that affected the negotiated contract amount were not reflected in the drawings). Also, certain portions of the steel package were moved to other cost line items to decrease the contract value and “allowance” items were removed from the pricing completely. Although a result of this process was a \$33 million decrease in the bid price, it did not necessarily decrease the final cost to the project by the full amount and left open technical areas which could give rise to significant change orders costs later. Our discussions with the key participants in this series of events found no one party clearly at fault, but simply that the team, as a unit, failed. The parties’ responsibilities were not clearly established or



pursued and appropriate oversight was not performed by the Director. In an attempt to minimize lead time and the impact of changing market conditions, there was a final rush to accept the contract at a reduced value. In the longer term, the rushed effort to let the steel package may not necessarily have been in the best interests of the Project.

***Recommendation #6: The design documents need to be reviewed to ensure that the proposed VE items incorporated into the steel buy are included in the final design. Also related to the structural steel buy are Recommendation numbers 1, 2, 4, 5, and 7.***

An integral part of Tishman's planned management process was the creation of a PMIS (Project Management Information System). This system is intended to track change orders, documents, and costs (budgeted, estimated, committed, and actual). Although a number of mini-systems, spreadsheets, and bulletin boards have been established by the BCEC staff on the Project, these systems are not coordinated and are not capable of handling the volume of transactions that will occur over the life of the Project.

Another of Tishman's original responsibilities was the monitoring of the MBE/WBE compliance of CHB and its subcontractors. This oversight function (CHB has the prime responsibility for meeting and reporting on its MBE/WBE status) was diminished from Tishman's originally planned level of effort. Due to the critical nature of this public policy issue, an effective oversight policy is important.

Although a part of the original Tishman scope, the cost estimating responsibilities were significantly reduced by the Director to participation in the VE process. As a result, no valid cost estimate was available for the Project until recently. HNTB/RVA has further indicated that it did not have viable cost information during the completion of its design development work. Although an ad hoc estimate was developed by the Director with support from CHB and





Tishman, its results have proven to be significantly flawed, apparently due to unrealistic Value Engineering assumptions.

An important part of the management function for a large construction project is regular analysis and communication of the status and challenges on the project. This need is best accomplished by a system of regular, formal reports from the key project team members. Although these reports may occasionally omit pieces of data (e.g.: budgetary data before it has been approved), the remainder of the information regarding the project status and challenges should still be reported.

***Recommendation #7. All tasks envisioned by the original Tishman scope of services, which are still applicable at this stage of the Project, should be reviewed to determine if they have been performed in an alternative manner or remain unperformed. For any items which remain applicable and unperformed and alternate arrangements have not made a prompt implementation of the task should be considered.***

A review of the Management Plan, the PMIS, the cost estimate, and the monthly reporting process was an integral part of the KPMG and BLL assessment. However, as they had not been completed as of this date, their review could not be performed.

***Recommendation #8: Upon completion by Tishman, the Management Plan, the cost estimate, and the monthly report formats should be reviewed to determine compliance with the standards as indicated in the attachments to this report.***

The design review process, although a full project team effort, is directed and final decisions are made by the Director. This process, including cost, constructibility, and value engineering (VE) reviews, has shown to have a number of deficiencies. Although cost and





constructibility reviews were performed, the last minute redesign of the steel package (see above) is symptomatic of an ineffective effort to pro-actively manage the cost and construction aspects of the design. Last minute changes to drawings are generally not the most cost effective way to refine the project design. Additionally, a review of the VE list has shown that in addition to valid VE suggestions, a number of accepted suggestions were short term or window dressing suggestions such as "move to owner's budget" and "decrease cost [therefore quality] of carpet" and others were simply hoped for target savings. Further, the MCCA operations staff has indicated that a number of accepted VE suggestion place significant impacts upon the operational aspects and/or operating cost of the facility.

***Recommendation #9: During the reconsideration and redesign efforts currently underway, the incorporation of VE suggestions should be enabled more proactively in the design process with more significant weight given to the operational and/or life-cycle cost issues. See also Implementation Standards-Project Cost Estimate, item number 4.***

Certain individuals (existing and planned) of the BCEC staff are retained under employment contracts rather than existing MCCA staff procedures. Our review of the standard contract indicates that no trial period is established for the individuals and any early termination requires a six month termination payment. This situation could subject the Project to unnecessary costs for a new hire who simply does not perform as expected. Further, although bonuses are contemplated in the compensation provisions, the criteria for receiving bonuses are not clear.

***Recommendation #10: The standard BCEC employment contract should be revised to establish clear employment performance objectives for bonuses as well as less costly provisions for individuals who are terminated for cause.***



### **III. OWNER'S REPRESENTATIVE - TISHMAN**

Tishman is charged with advising and consulting with the owner in conceiving, programming, designing, and constructing the Project. It serves as a hired staff at the micro-management level of the Project. Oversight of the Tishman activities is retained at the macro-level by the Director. Included in the Tishman duties are regular coordination meetings, budget development, cost and quality controls, progress monitoring, the review of monthly invoices, the review and negotiation of change orders, and the preparation of monthly reports, which include updated assessments of the expected project cost and schedule. These duties are outlined in greater detail in numerous sections of Tishman's contract. To date, Tishman asserts that it has been effectively prevented, by direct prohibition or understaffing, from fully performing the duties of its contract.

We have determined that, where allowed, Tishman has pursued its responsibilities using procedures and practices which are normal to the construction industry and appropriate for the Project. It holds regular meetings, maintains meeting minutes and correspondence, and maintains other project files as appropriate. As indicated above, Tishman's performance of its full contractual responsibilities will need to be reviewed upon the implementation of the recommendations noted above.

One of the difficulties inherent in the structure of Tishman's contract is that although Tishman's responsibilities are clearly established, the Director incrementally approves staffing and labor cost changes. This creates a conflict of interest as the Director seeks to control the costs of Tishman's contract, but still needs the tasks performed fully. Further, the enforceability of Tishman's responsibilities is questionable when the Director prevents them from retaining staff as indicated in the original staffing proposal.

***Recommendation #11: The Tishman contract should be modified to include a lump-sum pricing scheme rather than an incremental staff cost approach.***





#### IV. ARCHITECT/ENGINEER (the AE) - HNTB/RVA

The AE on the Project has been contracted to prepare conceptual designs, programming and schematics, construction documents, and to perform construction administration for the Project. To date, it has apparently met these obligation with no specific concerns voiced during our interviews with the project team. We did not perform any review of the design aspects on the project.

The AE's contract acknowledges the possibility of the scope of basic services changing over the life of the Project. This could necessitate a change order and additional billings to the MCCA. If these additional fee situations are not disclosed on a timely basis, the resolution becomes difficult and could lead to significant disputes.

*Recommendation #12: The AE billings (as well as billings from CHB and Tishman) should include: (1) a statement with each payment application that acknowledges payment in full (upon receipt), (2) indicate that all underlying costs have been or will be paid, and (3) confirm the non-existence or indicate the existence of any significant change or additional service issues accumulating over a fixed sum, for instance \$25,000.*

The AE's contract indicates that the Project shall be designed to comply with the construction budget. Based on our conversations with the AE staff and the Director, it is unclear whether this provision in the AE contract is still legally enforceable.

*Recommendation #13: Discussions should be held with the AE to determine/confirm its responsibilities in regards to the "design to" budget, and the proper treatment of redesign costs due to the current program change initiatives.*



## V. MCCA ACCOUNTING

The CFO and the accounting department for the MCCA are currently charged with the maintenance of the accounting system for the Project, as well as the processing of project invoices. Our review of the processes currently in place indicates that although adequate controls are in place for the processing of invoices and maintenance of overall project status reports, a full implementation of a PMIS is not envisioned. It remains necessary that the PMIS system be implemented in order to maintain estimated, committed, and incurred cost data on a detailed basis.

In addition to the significant involvement of the MCCA CFO, one full time project staff person has been retained to assist in the financial management and oversight process. However, given the scope of the work to be performed, and the other operational commitments of the CFO, this current staffing is insufficient.

***Recommendation #14: A senior level Project Controller should be retained. This person should be given enough authority and independence to maintain fiscal controls over the Project. This person will need to maintain or oversee the PMIS, provide oversight to the proper maintenance of fiscal controls, and ensure that the project cost reporting functions maintain the highest standards of accuracy and independence.***

Although adequate procedures are in place for the processing of invoices, the codification of the procedures has not been maximized.

***Recommendation #15: The procedures for the processing of project invoices, change orders, and estimated updates should be more thoroughly formalized and included in the new project Management Plan.***

The operation of the MCCA system is a key control feature for





project accounting as it is fully integrated with the standard systems and controls of the MCCA. The MCCA accounting system can produce a number of project accounting reports on a summary basis. A series of standard reports can be (and some are) prepared which will indicate the status of project on a summary basis and allow for the reconciliation of the MCCA system to the PMIS system maintained by Tishman.

***Recommendation #16: A series of standard reports (in the normal MCCA accounting system) highlighting key project information and reconciliation data within the PMIS, should be prepared and agreed to by the stakeholders of the Project.***

The MCCA has no in-house internal audit function, and no established procedures for the comprehensive review of costs incurred by CHB under its contract. This is normal for organizations of this size and nature, but should be considered a control weakness for this Project.

***Recommendation #17. A process should be established, on a periodic basis, for the comprehensive review of CHB costs incurred and billed and for an independent review of the accounting functions (i.e. PMIS functions) of the Project.***





## ***KPMG Overall Summary***

As a result of the above assessments prepared from our reviews of the contracts referred to above, our interviews and testing with the various entities, and our experience with the industry and projects of this size and nature, we have currently given this Project a “Yellow Light” rating in the area of its project management. The yellow rating is due to the number of areas where normal management procedures are minimal and a number of areas where the effort to contain soft costs has precluded the establishment or adherence to appropriate management processes. Future demands on the project team will only serve to exacerbate the situation.

Our main concerns on the Project, center on three main issues:

- The overall minimalist approach to procedures and staffing,
- The lack of an independent ongoing cost estimating process, and
- The lack of contemporaneous, formal reporting on the overall status of the project to the Development Committee of the MCCA Board.

Prompt attention to these deficiency areas will move our opinion to a “Green Light “ rating and further enable a more successful adherence to the project cost, schedule, and programmatic objectives as indicated by the enabling legislation.



## ***Recommendation Summary***

The following pages include a recapitulation of the recommendations noted earlier, the expected benefits to gained from the implementation of these recommendations, and the expected timing for the corrective actions to be taken.





Recommendations	Expected Benefits	Timing
1 – The expected strategy for the setting of the GMP, as provided for by the contract and the enabling legislation for the Project, should be followed.	<ul style="list-style-type: none"> <li>• Reduce risk due to open ended contract value</li> <li>• Incentive CHB to control costs during the design review, bidding, and construction operations</li> </ul>	120 days
2 – The MCCA should further clarify the responsibilities and expectations of CHB. Any agreed upon changes in the responsibilities and/or expectations should be documented if they differ from the existing contract. A clear understanding of the role of CHB, as it pertains to subcontractors, should be achieved and subsequently enforced.	<ul style="list-style-type: none"> <li>• Reduce risk of "dropped" responsibilities and misunderstandings</li> <li>• Gain value of CHB abilities and experience in dealing with subcontractors and change orders</li> </ul>	Immediate
3 – CHB should be directed to incorporate manpower loading into the Baseline CPM schedule. The activities for the mechanical equipment and steel activities should be revised to show further details and relationships.	<ul style="list-style-type: none"> <li>• Gain tool to use to monitor construction level of effort and expected progress</li> <li>• Gain tool to be used in monitoring completed activities and schedule dependencies</li> </ul>	30 days for updates, then ongoing monitoring activities
4 – The staffing levels of the Project should be enhanced to allow for more deliberate, proactive management efforts of the management staff.	<ul style="list-style-type: none"> <li>• Gain more pro-active management efforts</li> <li>• Gain more efficient meetings due to better preparation</li> <li>• Gain better follow up activities</li> <li>• Reduced risk of skipped tasks</li> </ul>	90 days



Recommendations	Expected Benefits	Timing
<p>5 – The BCEC organizational chart, which should serve as a guide to staff additions, should be modified to reflect simpler lines of authority. The number of direct reports and responsibilities must be reduced to a more manageable quantity.</p>	<ul style="list-style-type: none"> <li>• Enhance staff planning activities</li> <li>• Gain better communication flow</li> <li>• Enhance organizational responsibility</li> <li>• Reduce risk of disputes</li> </ul>	Immediate
<p>6 – The final design needs to be reviewed to ensure the proposed VE item which are incorporated into the structural steel pricing assumptions are included in the final design.</p>	<ul style="list-style-type: none"> <li>• Reduce final cost of steel bid package</li> <li>• Reduce dispute risks on steel contract</li> </ul>	Ongoing
<p>7 – All items envisioned by the original Tishman scope of services (which are still applicable at this stage of the Project) should be reviewed to determine if they have been performed in an alternative manner or remain unperformed. For any items which remain applicable and appropriate alternate arrangements have not been made, a prompt implementation of the task should be considered. Key tasks which need immediate implementation are:</p> <ul style="list-style-type: none"> <li>• The formal Management Plan with related procedures and documentation requirements</li> <li>• The PMIS</li> <li>• The MBE/WBE oversight function</li> </ul>	<ul style="list-style-type: none"> <li>• Restore balanced organization as originally envisioned</li> <li>• Gain better organized activities and procedures</li> <li>• Gain better oversight capabilities on project transactions</li> <li>• Gain better information on project status</li> <li>• Increase efficiencies of project staff</li> <li>• Increase reliability of project cost estimates</li> <li>• Ensure better compliance with MBE/WBE/Workforce requirements</li> <li>• Gain better understanding of project status and challenges</li> </ul>	Complete



Recommendations	Expected Benefits	Timing
<ul style="list-style-type: none"> <li>• Independent cost estimating</li> <li>• Monthly reports indicating the cost, schedule, and programmatic status of the Project and any significant issues which may impact upon these tasks.</li> </ul>		
<p>8 – Upon completion by Tishman, the Management Plan, the cost estimate, and the monthly report formats should be reviewed to determine compliance with the standards as indicated in the attachments to this report.</p>	<ul style="list-style-type: none"> <li>• Ensure standards in new organization and process</li> <li>• Decrease risk of “mis-implementation”</li> </ul>	90 days
<p>9 – The incorporation of VE suggestions should be more proactively in the design process with more significant weight given to operational and/or life-cycle cost issues.</p>	<ul style="list-style-type: none"> <li>• More effective cost controls during design revisions</li> <li>• Better operating costs for the final project</li> </ul>	Immediate
<p>10 – The standard BCEC employment contract should be revised to establish clear employee performance objectives for bonuses, as well as less costly termination provisions for individuals who do not meet their performance objectives.</p>	<ul style="list-style-type: none"> <li>• Avoid conflicts on contract personnel issues</li> <li>• Reduce cost of unsuccessful personnel</li> </ul>	90 days
<p>11 – The Tishman contract should be modified to include a</p>	<ul style="list-style-type: none"> <li>• Decrease risk of cost overruns</li> </ul>	Complete





Recommendations	Expected Benefits	Timing
lump-sum pricing scheme rather than an incremental staff cost approach.	<ul style="list-style-type: none"> <li>Clarify Tishman responsibilities</li> </ul>	
12 – The AE, CHB, and Tishman billings should include a statement with each payment application that acknowledges payment (upon receipt) in full, indicates that all underlying costs have been or will be paid and confirms non-existence or indicates the existence of any significant change or additional service costs.	<ul style="list-style-type: none"> <li>Decrease risk of claim activities</li> <li>Decrease risk of payment irregularities</li> </ul>	30 days
13 – Discussions should be held with the AE to determine/confirm its responsibilities in regards to the "design to" budget, and the proper treatment of redesign costs due to the current program change initiatives.	<ul style="list-style-type: none"> <li>Increase the focus of the AE efforts</li> <li>Control the cost to MCCA for the redesign efforts</li> </ul>	30 days
14 – A senior level project controller should be retained. This person should be given enough authority and independence to maintain fiscal controls over the Project. This person will need to maintain or oversee the PMIS, provide oversight to the proper maintenance of fiscal controls and ensure that the project cost reporting functions maintain the highest standards of accuracy and independence.	<ul style="list-style-type: none"> <li>Increase organizational checks and balances on project construction and fiscal decisions</li> <li>Increase Organizational awareness of fiscal issues</li> </ul>	Immediate



Recommendations	Expected Benefits	Timing
15 – The MCCA procedures for the processing of project invoices, change orders, and estimated updates should be more thoroughly formalized and be included in the new project Management Plan.	<ul style="list-style-type: none"> <li>• Increase organizational efficiencies</li> <li>• Ensure quality of transactions review process</li> <li>• Enable better documentation of review process</li> <li>• Avoid meaningless "rechecks"</li> <li>• Avoid review process gaps</li> </ul>	30 days
16 – A series of standard reports, highlighting key project information (in the normal MCCA accounting system) and reconciliation data within the PMIS, should be prepared and agreed to by the stakeholders of the Project.	<ul style="list-style-type: none"> <li>• Increase oversight efficiency with standard information</li> <li>• Ensure quality standards for the PMIS</li> </ul>	30 days
17 – A periodic process should be established for the comprehensive review of CHB costs incurred and billed and an independent review of the accounting functions (i.e. PMIS functions) for the Project.	<ul style="list-style-type: none"> <li>• Reduce cost exposure due to no compliant billings</li> <li>• Minimize disputes due to early warnings</li> <li>• Ensure quality of PMIS system</li> </ul>	90 days





### **Implementation Standards-The Management Plan**

1. The Management Plan should clearly identify the roles and responsibilities of each member and/or entity on the project team.
2. The Management Plan should be oriented along task or objective lines and incorporate the individual team members and/or entities roles within each task.
3. The Management Plan should establish best industry practices on the Project for the following issue areas:
  - Project Organization
  - Procurement Functions
  - Design Management
  - RFI, PCO, and Submittal Management
  - Scope Management
  - Schedule Management
  - Quality and Production Management
  - Collaborative Systems
  - Reporting and Communication
  - Oversight Functions
  - Education and Training
  - Continuous Organizational Improvement
4. The Management Plan should use flowcharts to demonstrate the chronology and logic of the decision making processes of the team members and/or entities.
5. The Management Plan should indicate not only the responsibilities of the team members and/or entities, but how they go about fulfilling their responsibilities (i.e., not that they just “review” a document but what is entailed in that review, for instance what they are looking for, what they are comparing against).





6. The Management Plan should include checklists to be used to direct and document the tasks prescribed by the Plan.

7. The Management Plan should include by reference and be in agreement with established MCCA procedures and standards wherever possible.



### **Implementation Standards-PMIS (Project Management Information System)**

1. The PMIS should incorporate all process and informational needs of the Project.
2. Individual software packages integrated into the PMIS should “talk” to each other to the maximum extent practicable.
3. The PMIS should be implemented on a network or website to maximize the coordination and one-entry strengths of the system.
4. Although the ability to enter data should be strictly controlled, the PMIS information should be widely available to all necessary team members on an on-line basis.
5. The ability to erase or adjust data should be strictly limited.
6. The PMIS should allow for multiple “cuts” of the same data, (i.e., costs by division, by contract, by area, by funding source).
7. The PMIS should be maintained on a contemporaneous basis and allow for ad hoc real-time reporting.
8. The PMIS should be implemented as an integral part of the normal project processes, (i.e., not simply an historical reporting system).
9. The PMIS should allow for real-time integration of key drawings, schedule data, correspondence, meeting minutes, contracts, disbursements, RFI's, and change orders by related issues.





### **Implementation Standards-Project Cost Estimate**

1. The cost estimate should be prepared on an independent basis, not under undue influence of the project management.
2. The cost estimate should be prepared and updated on a comprehensive basis, consistently over the life of the Project.
3. The cost estimate should be prepared on a “most likely cost” basis not a “best possible” or “worst case” basis.
4. The savings from Value Engineering suggestions should not be incorporated until drawings and specifications have been completed and pricing has been established.
5. A contingency amount, appropriate to the stage of procurement and construction, should be included in all estimates.
6. A “dueling estimate” program should be followed, which calls for estimates from both CHB and Tishman.
7. All costs, hard and soft, should be subject to a management review process at least quarterly.



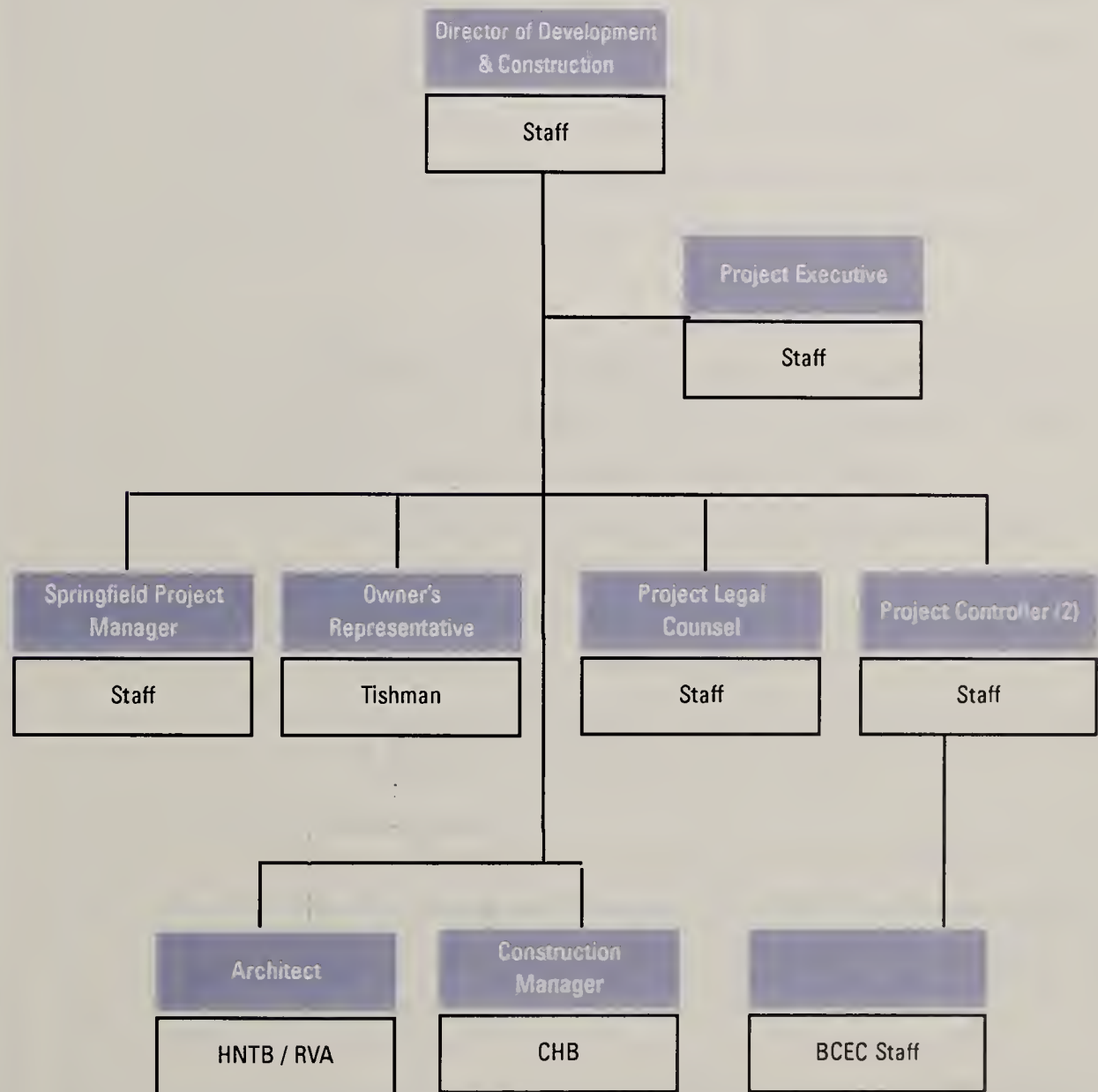
**Implementation Standards-Monthly Reporting Package  
(the Package)**

1. The Package should include the original budget information for reference purposes.
2. The Package should include the latest project cost estimate including all known, or identified cost issues; clearly showing any variance from budgeted cost and including narratives regarding issues that are affecting the expected final cost of the project.
3. The Package should include information on the commitment or buyout status of the Project.
4. The Package should include the updated construction progress schedule against major milestones and the original scheduled milestones for reference purposes; clearly showing any slippage in the project schedule and including narratives regarding issues that could result in delay, disruption, and/or acceleration costs.
5. The Package should include a report which indicates actual costs incurred compared to the cash flow projection and describing any significant variances.
6. The Package should include transaction flow information such as comparative charts of RFI quantities and durations, and PCO quantities and durations.
7. The Package should include an identification of key areas of risk exposures as identified as well as management efforts to resolve them.
8. The Package should indicate any identified performance issues with major entities on the Project.





### Implementation Standards-Project Team Organization Chart (1)



—— Contractual Lines of Authority  
 Operational Lines of Authority

NOTE 1: This chart is prepared along organizational lines and indicates a basic hierarchical approach to the organization. However, it is a concept chart only and should allow for minor changes, particularly in regards to the BCEC staff sections.

NOTE 2: The Project Controller will also work in liaison with the MCCA CFO.



## ***Subsequent Events***

During the course of this assessment, the Board has ordered the implementation of key recommendations as soon as they became apparent. Additionally, as a result of the procurement process review sessions, a list of corrective actions was developed. As a result, a number of changes have already taken place or are in the process of implementation. A final conclusion on the efficacy of these corrections actions cannot be formed at this time. The following is a list of the actions taken or begun as of the issue date of this report:

- Tishman's contract has been renegotiated to include lump sum pricing. All responsibilities as originally delineated remain in the contract and the implementation of those responsibilities is in process. More specifically,
  - ♦ The PMIS system has been selected, purchased, and is in the process of implementation.
  - ♦ The MBE/WBE oversight requirements have been re-initialized as a Tishman responsibility.
  - ♦ A project Management Plan has been drafted and is in the process of refinement and issuance.
- A new, independent cost estimate has been obtained. Due to the cost projections in that estimate, the Board has ordered a complete study of the alternatives available to bring the Project back within its original cost objectives.
- The BCEC staff is in the process of reorganization including the addition of several key personnel/positions which are not yet in place.







